

*Note on the Coming Opposition of Mars.* By N. E. Green, Esq.

In order to utilise the Opposition of this interesting planet, and secure a fair amount of uniformity in the drawings of various observers, special forms have been printed on a paper possessing peculiar facilities for the production of effect.

This paper consists of an under-surface of white enamel covered with a warm tone closely resembling the general tint of *Mars*. Upon this surface the dark marks may be drawn either with chalk or pencil, and softened with the stump in the usual manner.

The peculiar advantage consists in the use of the knife, by which the most delicate alterations of tint or form may be effected, or the warm tone partially removed for faint lights, or entirely erased for the polar snows.

The only care required is to avoid the use of india-rubber, all general softening or removal being effected by bread.

Sheets of these forms may be obtained at the monthly meeting in June, or by letter to N. E. Green, 3 Circus Road, St. John's Wood, who will feel much pleasure in supplying them to the Fellows.

*Note on the Distribution of the Fixed Stars.*

By R. A. Proctor, Esq.

Von Littrow has shown that when only the numerical relations of stars of various orders of brightness are considered, the increase in the number of the fainter stars corresponds with the theory that apparent magnitude depends chiefly on distance. When, however, the localisation of stars of various orders is considered, we find evidence of the numerical superabundance of stars really smaller than their neighbours. To take a rough illustration of the effect of this consideration: If, in examining any telescopic field taken at random, we find for each increase of illuminating power an increasing number of stars, the inference is that we are penetrating further and further into space. But this inference must be rejected if we find that the field of view lies in either of the *nubeculæ*, and that the increase is not recognised, or only occurs in a markedly less degree, outside the borders of the star-cloud. In like manner, though not so obviously to ordinary vision, we find evidence of the existence of clouds of stars or streams of stars (such as are found in various parts of the Milky Way); and numerical increase with increasing powers, if found within such clouds and in markedly less degree outside their borders, cannot be referred to increase of distance, but, according to the laws of probability, must be explained as due to the recognition of stars really smaller lying within the limits

of such clouds or streams. (By streams I do not mean rows of stars, but stream-shaped *regions* in which are many thousands of stars.) I think my Chart of 324,000 Stars in the Northern Hemisphere demonstrates this, especially when it is remembered that the regions where *these* stars (largely exceeding in number those dealt with statistically by Von Littrow, or indeed, so far as I know, by any other) chiefly congregate, are precisely the regions where stars down to the 20th magnitude are found in greatest number. As Mr. W. M. Christie remarks in a very able and impartial review of my researches (*Academy* for June 27, 1874), "it is hardly conceivable that" the clustering aggregations "should be enormously long cylinders or spindles, turned in every case exactly towards us."

It appears to me that direct evidence based on the laws of local aggregation, as deduced from isographic charting (which is in effect statistical enumeration recorded so that all its classifications can be *seen*), cannot be disposed of by a less perfect method of counting, in which averages only are considered without reference to localisation. This would be much as though an archæologist's theory respecting certain mounds in a plain should be met by a surveyor with the argument that the mounds had no real existence, seeing that, if they were levelled, the plain would not rise appreciably, where they had been, above the surrounding level. If the mounds could be thus disposed of, any theory respecting them would fall to the ground. In like manner, I must admit that if no attention be paid to the evidence of stellar aggregation in particular regions of the heavens, there remains little evidence of the existence of real stellar aggregations in space.

### *Visible Transits of Mercury to the Year 2000.*

By Rev. S. J. Johnson.

Upon recently making an examination, for curiosity, of the transits of *Mercury* that were to be expected in this land till the close of the next century, I found the method of cycles, even that of 263 years, would not answer in many instances, as, owing to the difference of the planet's geocentric latitude at the return of the period, the duration of the transit may vary considerably. I therefore computed the places of ☿ and ♀ from some approximate tables—those given in Lindsay's *Chrono-Astrolabe*—and the results will, I believe, deviate little from the truth.

Thirteen transits of *Mercury* fall in the present century, but one only, that of 1832, was visible throughout at Greenwich. In the next century twelve happen, four of them being entirely visible there.

After the transit of 1878 there will be no opportunity for a good observation of this sort in the remaining years of this